

m/021/004
May 14, 1997

Mr. D. Wayne Hedberg
Division of Oil, Gas, & Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

RE: Escalante Mine tailings impoundment underdrain

Dear Mr. Hedberg:

One of the reclamation plan requirements at the Escalante unit was to plug the underdrain pipes that were used to dewater the tailings. Hecla plans to seal the underdrain pipes this summer, after receiving Division of Oil, Gas, and Mining final approval.

There are three pipes that must be sealed: the underdrain collection pipe, a toe drain, and the decant line. All three are 4 inch steel pipes laid on a 2% grade from the valve at the toe of the dam through the clay liner (see Figure 1).

The pipes will be filled with a bentonite grout equivalent to Volclay Grout II (see attached specifications) mixed to the appropriate percent solids. All grout materials will be pumped through the existing pipe and valve system so there will be no loss of fluid from the pipes while they are being plugged. Since the pipes have been laid at a 2% grade it will be necessary to fill them a minimum 17 feet past the clay liner to ensure the pipe is completely filled through the liner. Sufficient grout will be pumped to fill a minimum 20 feet past the clay liner to provide assurance the pipe is filled. One sack of cement grout will be pumped in following the grout to provide a solid plug approximately 10 feet long.

Your February 18, 1997 letter requested any water quality information Hecla may have regarding the underdrain flow. Hecla has not routinely monitored water quality in the underdrain flow. An analysis for a suite of metals was done in 1993 and random analyses for cyanide have been completed after that. The most recent sample was taken in 1995 and showed a total cyanide concentration of 100 ppm, comparable to the results obtained in the 1993 samples, which indicates a status quo as far as water quality is concerned. The water that continues to bleed from the tailings can be expected to remain consistent in quality since the source remains undisturbed. There are no chemical or physical processes occurring within the tailings which would be expected to significantly alter composition of the water, so sampling the drainage at this time would appear to be unproductive.



Hydrologic studies completed by Grant, Schreiber and Associates as part of the reclamation plan confirmed the integrity of the pond lining system. The analyses showed that water contained within the impoundment has been isolated and cannot reasonably be expected to penetrate the liner and reach groundwater below the pond.

The Escalante site is currently being offered for sale and we are currently negotiating with a potential purchaser. The site may be used for other commercial purposes if it is sold, which require an amendment to the reclamation plan to reflect the change in proposed post-mining land use. We would expect to leave all structures intact if the property is sold.

I look forward to hearing from you regarding this issue. Please call me at (208) 769-4157 if you have any further questions.

Sincerely yours,



Alan Wilson
Senior Reclamation Engineer

cc: L. A. Drew



COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY

TECHNICAL DATA SHEET

Volclay® Grout II

A Granular High Solids Bentonite Grout

NSF.

Description:

Volclay Grout II is a granular, 25% solids, polymer free, single component, bentonite grout. Volclay Grout II high density grout, has advantages which allow placement in a low viscosity state. Expansion of the bentonite occurs downhole, resulting in an easy mixing, smooth uniform slurry.

Recommended Use: Volclay Grout II is designed for use in sealing well casings, geothermal heat pump loop systems, and decommissioning abandoned wells.

Advantages:

- Higher solids results in less settling
- Low dust
- Mixes and pumps with ease
- Pumping equipment is easily cleaned
- More user friendly than bentonite/polymer grouts

Mixing and Application:

For best results, Volclay Grout II is designed to be mixed at 25% solids. Add one 50 lb bag of Volclay Grout II to 18 gallons of freshwater to produce 3.0 ft³ of grout. For best results mix with a paddle type mixer and displace grout with a positive displacement pump. Pump grout through a tremie pipe from the bottom of the borehole to the surface. Pumping should continue until the grout purged to the surface reaches the proper mud weight. If a porous formation is encountered where there is potential for a large grout loss, a 26% to 27% solids mixture is recommended.

The following mixing ratios are recommended based on the desired percentage of solids:

<u>Solids</u>	<u>Water Per 50 Lb. Bag</u>	<u>Mud Wt.</u>	<u>Yield</u>
25%	18 Gallons	9.6 lb./gal.	3.0 cu.ft.
26%	17 Gallons	9.7 lb./gal.	2.9 cu.ft.
27%	16 Gallons	9.8 lb./gal.	2.8 cu.ft.

Packaging: 50 lb. multiwall, water resistant bags, 48 bags per pallet. All pallets are shrinkwrapped.

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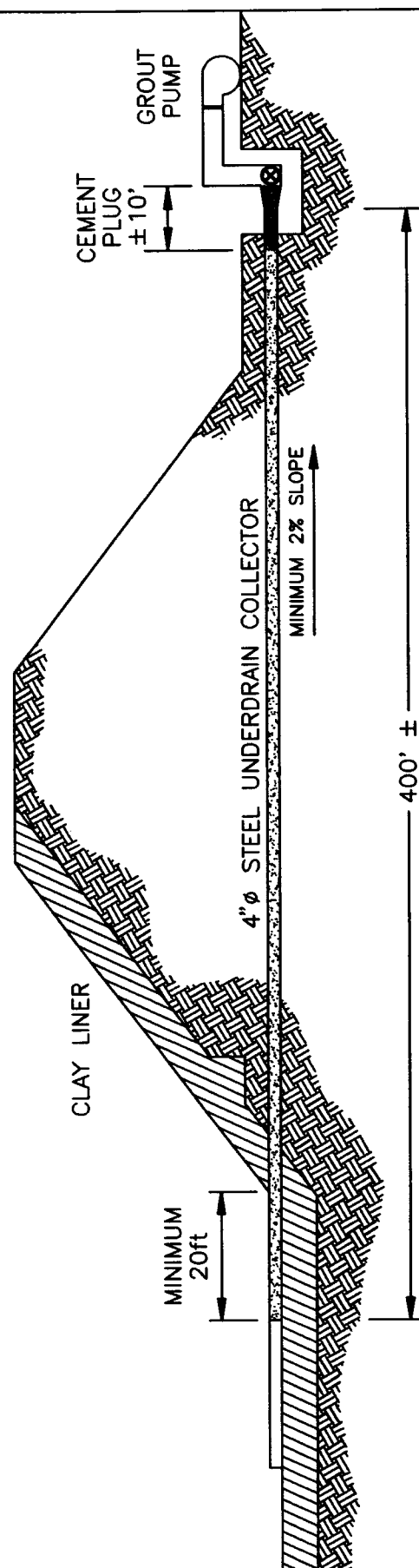


FIGURE 1
ESCALANTE TAILINGS IMPOUNDMENT
UNDERDRAIN PLUG SYSTEM